

Applicant : James R. LaDine et al.
Serial No. : 09/835,273
Filed : April 13, 2001
Page : 2 of 4

Attorney's Docket No.: 12800-003001
DRAFT

REMARKS

Claim Rejections 35 U.S.C. § 103

The Examiner rejected pending claims 1, 2, 5-18, and 22-45 under 35 U.S.C. § 103 as allegedly obvious over U.S. Patent No. 4,507,555 ("Chang") or Demirev et al., Analytical Chemistry 69(15):2893, 1997 ("Demirev"). The applicants respectfully disagree.

There are three pending independent claims, 1 and 22 (directed to methods) and 29 (directed to a system), which are addressed together here. Each of the three independent claims provides for the analysis of multiple samples containing multiple proteins that were taken from a biological system at multiple time intervals.

In each of the pending independent claims, the samples are submitted to a separation technique and the resulting multiple protein samples are then allocated among mass spectrometry systems in an array of mass spectrometry systems. Each mass spectrometry system provides mass spectral data indicating identity and abundance of one or more proteins. A common computing device then collates the mass spectral data, for the multiple protein samples from the multiple samples, as a function of the time of sampling of the biological system.

Neither Chang or Demirev describes or suggests the invention of the pending independent claims. In particular, neither Chang or Demirev describes or suggests the use of an array of mass spectrometry systems, each system providing mass spectral data indicating identity and abundance of one or more proteins, let alone the use of an array of mass spectrometry systems for the analysis of multiple samples that have each been separated into multiple protein samples, as required by the pending independent claims.

Chang describes the use of a single mass spectrometry system to analyze a single sample. The system is referred to as a "parallel" mass spectrometer (PMS) because it has two or more sets of ion extraction means, mass resolution devices, and ion detectors that are connected in parallel rather than in tandem. This type of mass spectrometer provides for multiple simultaneous analyses of a single sample – even a sample that has a plurality of components. But there is no parallel array of mass spectrometry systems and no analysis of multiple protein samples (each of

Applicant : James R. LaDine et al.
Serial No. : 09/835,273
Filed : April 13, 2001
Page : 3 of 4

Attorney's Docket No.: 12800-003001
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which may have a plurality of components) from multiple samples, as required by the pending independent claims.

For any of these reasons, the applicants submit that none of the pending independent claims is rendered obvious by Chang. Accordingly, claims 1, 22, and 29 are allowable over Chang.

Demirev describes statistics that can be used to characterize the diversity of a combinatorial library of peptides in a single sample, e.g. by calculating the mean and standard deviation of mass spectrometry signals generated for the library of peptides. But Demirev does not teach the use of an array of mass spectrometers, each providing mass spectral data indicating identity of any proteins in a sample, as required by each of the independent claims, or the analysis of multiple samples. Indeed, Demirev describes measures from a single mass spectrometer that characterize a library of peptides in a single samples rather than identified peptides or proteins. The "massively parallel" (p. 2900) approach described by Demirev is an approach for characterizing a combinatorial or "parallel" library of peptides – not a method for analyzing multiple protein samples, from multiple samples, with a parallel array of mass spectrometers, as required by the pending independent claims.

For any of these reasons, the applicants submit that none of the pending independent claims is rendered obvious by Demirev. Accordingly, claims 1, 22, and 29 are allowable over Demirev.

Claims 2, 5-18, and 38-45 depend from claim 1, and are allowable at least for any of the reasons given for claim 1. Claims 23-28 depend from claim 22, and are allowable at least for any of the reasons given for claim 22. Claims 30-37 depend from claim 29 and are allowable at least for any of the reasons given for claim 29. Accordingly, claims 2, 5-18, 23-28, 30-37, and 38-45 are also allowable.

In summary, the applicants respectfully request reconsideration of the Examiner's rejection of claims 1, 2, 5-18, and 22-45 over the cited references because these references simply do not describe or suggest the limitations of claims 1, 22, or 29, or any of the claims depending from them. Allowance of all claims is respectfully requested.

Applicant : James R. LaDine et al.
Serial No. : 09/835,273
Filed : April 13, 2001
Page : 4 of 4

Attorney's Docket No.: 12800-003001
DRAFT

No fees are believed to be due. Please apply any applicable charges or credits to deposit account 06-1050.

Respectfully submitted,

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